



LEGAL CERTAINTY IN COASTAL ZONING FOR LOCAL WISDOM-BASED SEAWEED INDUSTRY DEVELOPMENT IN THE BLUE ECONOMY

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ABSTRACT

Indonesia's coastal governance is characterized by jurisdictional overlaps and normative inconsistencies, which undermine the legal framework sustaining the seaweed sector within the Blue Economy paradigm. Employing a normative-doctrinal method, this study adopts the principle of legal certainty in coastal spatial planning and evaluates the scope of regional governments' competence in integrating local wisdom into marine resource regulation. The analysis reveals that the centralization of authority under Law No. 6 of 2023 generates normative disharmony with Law No. 23 of 2014, thereby restricting provincial administrative jurisdiction over maritime affairs. This recentralization engenders regulatory dualism, overlapping licensing regimes, and weakens legal safeguards for coastal communities. In contrast, regional governments advance sustainable governance by institutionalizing local wisdom through participatory and empowerment-based mechanisms, which reconcile ecological imperatives with economic objectives. The study concludes that regulatory harmonization and juridical recognition of local wisdom are essential for equitable and sustainable marine development.

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1. INTRODUCTION

Coastal areas are strategic areas, supported by geographical and ecological advantages, making them centers of shipping activities, natural resource exploitation, and aquaculture (Octavian et al., 2022, p. 302) and harboring important ecosystems, such as mangroves, coral reefs, and seagrass beds (Arifin & Satria, 2020, p. 522). Their management is regulated by Law Number 6 of 2023, concerning the Stipulation of the Job Creation Regulation in place of Law, which seeks to simplify licensing and ensure legal certainty for businesses. Indonesia, as the world's largest archipelagic state, with 17,504 islands and two-thirds of its territory comprising sea, has the fourth-longest coastline globally (Rahim et al., 2024, p. 3; Listiyono et al., 2021, p. 74). To support sustainable marine management and strengthen the maritime economy, the 2023-2045 Blue Economy Roadmap was developed (Indonesia.go.id, 2022). Johnson and Hanes emphasize that marine social sciences are crucial to advancing sustainable aquaculture and fostering inclusive marine governance (Heidkamp et al., 2022, p. 6). Studies such as China's Marine Functional Zoning (Fang et al., 2021) and India's seaweed governance under CMFRI and ICAR (Parappurathu & V. P., 2024), illustrate how spatial regulation ensures harmony between ecological and economic objectives.

The seaweed industry is a strategic sector of Indonesia's Blue Economy, contributing significantly to economic growth and coastal welfare. Indonesia, with a marine area of 6.4 million km² and an annual fisheries potential of 12.01 million tons, is the world's second-largest seaweed exporter (DJPDSPKP, 2023), commanding a 33.6% share valued at US\$275 million in 2023 (Workman, 2025). The fisheries sector's GDP contribution reached 2.66% in 2023, equivalent to IDR 555 trillion, and 2.5% in the second quarter of 2024 (BPS, 2024, p. 75). Nevertheless, 76.71% of exports continue to be dominated by raw materials (Adiguna et al., 2022, p. 32), reflecting Indonesia's limited downstream processing capacity. Production is dominated by *Kappaphycus alvarezii* (7.05 million tons) and *Gracilaria* (1.91 million tons) (DJPDSPKP, 2023, p. 2). As shown in Figure 1, South Sulawesi remains the main production center, with 2.67 million tons recorded in 2022 (BPS, 2024, p. 214). However, only 0.8% of the 12.3 million hectares of mariculture potential is currently utilized, indicating limited downstream capacity and weak industrial competitiveness (Zahira, 2022; Coordinating Ministry for Maritime Affairs and Investment, 2024).

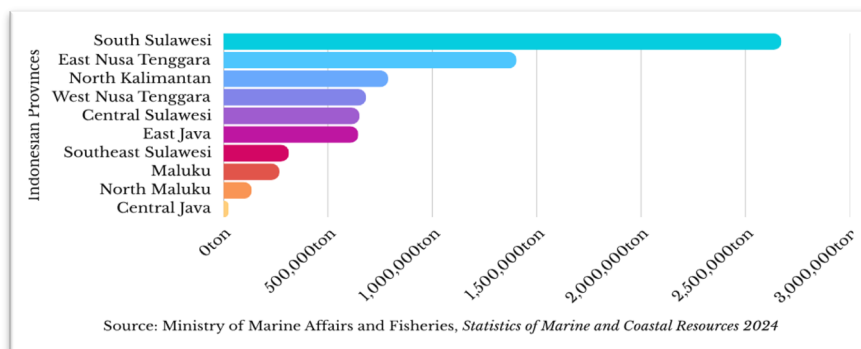


Figure 1. Top 10 Seaweed Aquaculture Producing Provinces in Indonesia (2022)

Coastal zoning for sustainable mariculture and seaweed industry regulation is regulated in Article 18 of Law No. 6/2023, which emphasizes a scientific and managerial approach. The Malaumkarta Indigenous community in West Papua manages a 4,000-hectare coastline through the MHA Management Unit, drawing on local wisdom and integrating it into the Coastal Area and Small Islands Zoning Plan (RZWP-3-K), while aligning with the Other Effective Area-Based Conservation Measures (OECM) scheme (Riszky et al., 2024, p. 26). Despite such initiatives, cross-sectoral disharmony among tourism, environmental, and mining policies persists, triggering conflicts and competing profit claims (Anwar & Shafira, 2020, p. 282; Suryanti et al., 2019, p. 27). RZWP-3-K was originally regulated on the Regional Regulations on Article 9 paragraph (5) of Law Number 27 of 2007, but Article 18 of Law No. 6/2023 revokes zoning provisions, namely Articles 9-14, creating the potential for legal uncertainty.

Before Law No. 6/2023, the determination of RZWP-3-K fell under the jurisdiction of the Regional Governments (Pemda) through local regulations. However, this authority was retracted and transferred to the Central Government under Article 18 of Law No. 6/2023, particularly Article 7C, which stipulates that marine spatial planning regulations, including Articles 7, 7A, and 7B, must be established by Government Regulation. Ministerial Regulation No. 28 of 2021 further defines zoning categories and permit requirements, such as the Approval of the Suitability of Marine Spatial Utilization Activities (PKKPRL) and the Confirmation of Marine Spatial Suitability (KKRL), to ensure planned, integrated, and compliant spatial use. Nonetheless, inconsistencies remain between Law No. 23 of 2014, which grants provinces authority up to 12 nautical miles, and Law No. 6 of 2023, which centralizes marine licensing (Lukito, 2024; Ansong et al., 2021, p. 120).

Several RZWP-3-K policies have triggered conflicts and weakened legal certainty, particularly in South Sulawesi, Banten, Bengkulu, and the Bangka Belitung Islands. These cases demonstrate that extractive and investment interests often override community rights, resulting in ecosystem degradation, social tension, and declining policy legitimacy. According to previous research indicates that since Laws No. 1/2014 and No. 23/2014, the coastal management authority has shifted from districts to provinces up to 12 nautical miles, while central control applies beyond that boundary (Arifin & Satria, 2020). However, without regulatory harmonization, overlaps among laws and the risk of foreign exploitation remain, which is inconsistent with Article 33, paragraph (3), of the 1945 Constitution.

Therefore, this study emphasizes the urgency of legal certainty and the strategic role of local governments in integrating local wisdom to sustain the seaweed industry, addressing two key questions: (1) How does legal certainty relate to coastal zoning in seaweed industry development? Moreover, (2) What role do local governments play in accommodating local wisdom? Furthermore, this study contributes to policy reform by elucidating the doctrine of legal certainty, promoting regulatory harmonization between governance levels, and reinforcing local wisdom within coastal zoning to ensure a coherent and sustainable legal framework for the seaweed sector.

2. RESEARCH METHODS

This research is a dogmatic or doctrinal legal study that examines positive legal norms, principles, concepts, and doctrines through a systematic and structured approach (Atikah, 2020, p. 28; Qamar et al., 2017, p. 5). Furthermore, this research evaluates the relationships among regulations, highlighting the legislative process, decision-making mechanisms, and legal policies in terms of both substance and form (Purwati, 2020, p. 11). According to D.H.M. Meuwissen, this research aims to describe, analyze, and interpret norms, while M. Van Hoecke emphasizes the formulation of positive law within a society (Tutik, 2012, p. 452). This research focuses on the principle of legal certainty in coastal zoning regulation to develop a sustainable seaweed industry. The methods used include a legislative approach and a case approach (Baene, 2023, p. 5) in various places that reveal conflicts between fishermen and sand mines, rejection of zoning regulations, and damage to marine ecosystems.

The data sources in this study consist of primary legal materials (Law No. 1/2014, Law No. 23/2014, Law No. 6/2023, Ministerial Regulation No. 28/2021), secondary legal materials (books, journals, theses, related scientific works), and tertiary legal materials (news and blogs that support legal interpretation). Data collection was carried out through a literature study by tracing, identifying, and inventorying relevant literature, legal documents, and regulations (Atikah, 2020, p. 55). The data obtained were then analyzed using content analysis, employing classification, interpretation, and descriptive-analytical techniques (Fadillah, 2022, p. 733; Sofiah, Suhartono, and Hidayah, 2020, p. 4), to examine aspects of legal certainty in coastal zoning within the Blue Economy framework. In this analysis, legal materials were classified by hierarchical position, relevance to coastal zoning, and level of regulatory authority, and interpreted to assess consistency among statutory provisions and their implications for legal certainty. Data triangulation was applied by cross-checking legal sources with expert opinions and institutional documents to enhance the validity and reliability of findings.

3. RESULT AND ANALYSIS

Legal Certainty Regarding Coastal Area Zoning in Seaweed Industry Development

Marine spatial planning ensures lawful use of space and lays the foundation for investment permits in the marine sector. This instrument prevents conflicts of interest between parties (Parjito et al., 2022, p. 12) by regulating resource use, structures, and spatial patterns, including permitted, restricted, or permit-required activities. Article 18 of Law No. 6 of 2023, specifically Article 7, paragraph (1), stipulates the RZWP-3-K as a guideline for marine spatial utilization, the determination of cultivation areas, such as seaweed cultivation, and the issuance of permits under regional authority. Previously, the RZWP-3-K was stipulated in the Regional Regulations, as provided in Articles 9 to 14 of Law No. 27 of 2007, in conjunction with Law No. 1 of 2014 (Hariyanti, 2021, p. 9). However, Law No. 6 of 2023 centralizes authority, potentially creating legal uncertainty in coastal management.

Various cases in Indonesia illustrate serious problems with coastal zoning policies that neglect community participation. In South Sulawesi, the designation of islands as sand mining zones caused environmental damage and the loss of fishermen's livelihoods (Mata Kita, 2024). Similar conditions occurred in Banten, where the RZWP-3-K Regional Regulation favored investors through reclamation and mining, thereby reducing fishermen's living space (WALHI, 2021). In Bengkulu, the west coast of Seluma, a fishing ground for local fishermen, was designated as an iron sand mining area without consideration for the community's sustainable welfare (WALHI, 2022). Likewise, in Bangka Belitung, the designation of the coast as an offshore tin mining area led to illegal mining, ecosystem degradation, and social conflict (Agustari & Muslim, 2024, p. 182). The absence of community participation in these policies contradicts Law No. 6 of 2023, which requires public participation in the management of coastal areas and small islands.

The lack of public involvement in policymaking creates legal uncertainty and negatively impacts affected communities. According to Sudikno Mertokusumo, legal certainty is the primary goal of law, which must be achieved through clear juridical regulations to prevent legal vacuums (Devi, 2025, p. 20; Muzahar et al., 2022). Gustav Radbruch emphasized that law must balance justice, certainty, and utility between *das sollen* and *das sein* to be effective and respected by society (Dimas, 2021, pp. 210, 214; Santoso, 2021, pp. 328–329). Utrecht asserted that legal certainty includes explicit norms and the protection of individual rights within legal boundaries (Nurlaili, 2019, pp. 8–9). The state is also obligated to guarantee Indigenous Peoples' environmental rights through meaningful participation (Azaria et al., 2023, p. 197).

Changes in authority under Law No. 6 of 2023 have significantly affected marine space management, with the government imposing KKPR obligations as legal oversight to ensure that the use of high-value marine resources complies with regulations (Smart Legal, 2024). Previously, location permits were governed by Article 16 of Law No. 1 of 2014, but after the amendment, the authority to issue them was transferred to the Central Government. This shift created a conflict with Law No. 23 of 2014, which grants provinces the right to manage marine areas up to 12 miles, including permits for non-oil and gas marine use and coastal community

empowerment (Attachment to Law No. 23 of 2014, p. 102). Article 18 of Law No. 6 of 2023 designates PKKPR as a central authority, sparking regional protests over reduced provincial autonomy.

The dualism of central and provincial authority in managing the 0–12 miles seabed has led to overlapping seaweed cultivation permits, creating legal uncertainty and reducing productivity in key centers (Indonesia.go.id, 2023). The JaSuDa team emphasized that cultivation is optimal in shallow waters due to low light and salinity, although deep waters remain viable if currents and temperatures are appropriate (Sardjana and Ibrahim, 2025; Pratama, 2023). Article 18 of Law No. 6/2023 stipulates that coastal waters include 12 miles from the coastline, estuaries, bays, brackish waters, and lagoons, which are vital for seaweed growth and the coastal economy. Conflicts between seaweed cultivation and shipping lanes, as seen in Nunukan, highlight the need for clear regulations and marine space permits to ensure that cultivation remains legal, safe, and non-disruptive (Pusaran Media, 2024).

Table 1. Jurisdictional Distribution of Coastal and Marine Management Authority under Indonesian Law

Level of Government	Legal Basis	Scope of Jurisdiction (Spatial Competence)	Juridical Issues
Central Government	Law No. 6 of 2023 (Article 18), Ministerial Regulation No. 28 of 2021.	Territorial sea beyond 12 nautical miles, national maritime zones, and approval of Marine Spatial Planning (KKPR).	The re-centralization of authority under Law No. 6/2023 undermines the autonomy granted by Law No. 23/2014, thereby producing regulatory dualism and weakening provincial jurisdiction over marine affairs.
Provincial Government	Law No. 23 of 2014 (Article 27 paragraph (3) & Annex p. 102), Law No. 1 of 2014 (previous regime).	Coastal waters, extending up to 12 nautical miles from the baseline, excluding designated port areas and nationally administered maritime zones.	Provincial authority remains limited and dependent, as it operates under central oversight in licensing and marine spatial approvals. Jurisdictional overlaps within the 0–12 nautical mile zone, moreover, often lead to conflicts of authority.
District/City Government	Pre-Law No. 23 of 2014 regime (Law No. 32 of 2004, Article 18 paragraph (1)).	This jurisdiction extended up to four nautical miles from the coastal baseline, and was rescinded following the enactment of the 2014 legislation.	The authority of regencies and municipalities was largely revoked following the enactment of Law No. 23 of 2014. Regencies and municipalities now function primarily in coordination and administrative support roles under the supervision of the provincial government.

Based on the discussion of legal certainty, the main aspects include (i) clarity of norms, (ii) unity of authority and certainty of licensing procedures (PKKPR/KKRL), (iii) transitional arrangements for existing permits and plans, (iv) dispute resolution mechanisms, and (v) guarantees of public participation. Normatively, Article 18 of Law No. 6/2023 centralizes authority and delegates further regulation to Government Regulation (Articles 7, 7A, and 7B), but it still overlaps with Law No. 23/2014 on provincial authority within 0 to 12 miles, meaning that criteria (i) and (ii) are not entirely fulfilled. Ministerial Regulation No. 28/2021 has formally fulfilled criterion (ii) procedurally but lacks consistent implementation of transitional arrangements under criterion (iii). At the RZWP-3-K Regional Regulation level, weak public participation and the non-operational nature of administrative and spatial dispute mechanisms indicate that criteria (iv) and (v) have not been fulfilled.

Table 2. Policy Analysis of RZWP-3-K and the Socio-Environmental Impacts in Several Provinces

Area	Types of Extractive Activities Listed in the RZWP-3-K	Priority Zone (Marine Space Allocation)	Criticism toward and Impacts on the Natural and Social Environment
South Sulawesi	South Sulawesi Regional Regulation No. 2 of 2019 lists marine sand mining in the Spermonde Block, Flores, and others, oil and gas mining, such as in the Selayar, Karaengta, and Kambuno Blocks, and coastal reclamation, such as the Center Point of Indonesia (CPI) project in Makassar.	Approximately 26,263 hectares have been allocated for sea sand mining in the Spermonde Block, and approximately 3,850 hectares for services and trade related to reclamation. Apart from the tourism and port zones, there is barely enough space for fishing settlements.	NGOs have criticized South Sulawesi's RZWP-3-K for favoring extractive interests and neglecting fishermen. Sea sand mining has triggered severe abrasion, destroying homes, submerging graves, and eliminating livelihoods. Its drafting has also been deemed non-participatory and

Banten	<p>The priority of extractive projects in the Banten RZWP-3-K includes sea sand mining at seven locations, oil and gas at three locations, coastal reclamation in 54 areas, tourism development at ten points, large industries at three points, ports at 25 points, and energy development at five points.</p>	<p>Banten's RZWP-3-K demonstrates inequity, restricting space for 9,200 traditional fishermen, while the coast is primarily geared toward reclamation, mining, and other developments. Since 2017, reclamation plans at 54 locations have triggered 24 cases of land grabbing and coastal area destruction.</p>	<p>favors reclamation projects, such as the CPI. Banten-based WALHI and AMUK believe that the RZWP-3-K violates fishermen's rights because it lacks a dedicated zone and instead legalizes reclamation and mining. Sand dredging, reclamation, and industrial expansion have led to the criminalization of residents, marine damage, and dozens of evictions and coastal pollution.</p>
Bengkulu	<p>Mineral and Coal Mining on the west coast of Seluma Regency is prioritized as one of the main focuses of extraction in the Bengkulu RZWP-3-K.</p>	<p>The mineral and coal mining zone, covering 263.29 hectares on the west coast of Seluma, is the focus of Bengkulu's RZWP-3-K. Article 37 letter e of the Regional Regulation No. 3/2023 designates the mining and energy area as the fourth largest, covering 194,309 hectares of the total suitable cultivation area.</p>	<p>WALHI rejects the revision of the RZWP-3-K Bengkulu because it is pro-investor and threatens coastal rights. The conversion of the fishing zone to a mining zone violates Law 27/2007, even though fishermen in Pasar Seluma have been resisting it since 2010 due to abrasion from iron sand mining.</p>
Bangka Belitung	<p>Bangka Belitung Regional Regulation No. 3/2020 designates four regencies in Bangka as mining areas covering 477,077.3 hectares, while Belitung has zero mining capacity. However, PT Timah Tbk's mining permit (IUP) in East Belitung, covering 30,910 hectares until 2025, conflicts with the regulation. The local government considers it valid, while the community believes that the permit, which does not comply with zoning regulations, should be reviewed for legal certainty and coastal protection.</p>	<p>Bangka Belitung Islands Regional Regulation No. 3 of 2020 designates most of the waters as mineral mining zones, covering 4 of the 7 districts with a total area of 477,077.3 ha, consisting of Bangka 110,229.6 ha, West Bangka 145,025.1 ha, South Bangka 108,588.8 ha, and Central Bangka 113,233.8 ha.</p>	<p>Bangka Belitung-based WALHI criticized the RZWP-3-K because, despite Belitung being "mining-free," old permits remain in effect and create new pollution. Tin mining pollutes the sea up to seven miles, accumulates heavy metals, posing a risk to fishermen, damages coral reefs between 2015 and 2017, and triggers a fisheries conflict in Kelabat Bay due to overlapping zones.</p>

The cases of RZWP-3-K in several regions reveal that fishermen's living spaces are marginalized by extractive activities such as mining, oil and gas, and reclamation, which are legitimized without public participation, reflecting weak protection for coastal communities. Reclamation practices cause ecosystem degradation, declining fish catches, and social conflict arising from land acquisition (Jamika et al., 2023, p. 107). Sea sand mining also contributes to conflict and coastal damage, despite the geological importance of quartz, calcite, and feldspar materials (Surianti, Asrim, and Wardana, 2023, p. 60). Although previously prohibited by Presidential Instruction No. 2 of 2002, Presidential Decree No. 33 of 2002, and Ministerial Decree No. 117 of 2003, it was reauthorized under Government Regulation No. 26 of 2023 (Kornelius, 2024, p. 83). Violations persist, prioritizing economic interests over ecology and fishermen's rights.

The ecological impacts of sea sand mining cause water turbidity, coral reef damage, disruption of fish cycles, and coastal erosion, which reduces fishermen's catches (Jamika et al., 2023, p. 106). This activity also damages

mangroves, seagrass beds, and coral reefs that protect coasts from abrasion, and it causes pollution from hazardous waste. Due to the ecological, economic, and social losses, revoking permits for sea sand mining is essential to protect coastal areas and small-scale fishermen (Kornelius, 2024, pp. 89-92). The lack of public participation in coastal zoning weakens policy legitimacy and spatial equity, even though meaningful participation is both an ecological principle and an international legal obligation (Zulkarnain et al., 2022; Zaucha and Gee, 2019, p. 298). The Bengkulu RZWP-3-K case highlights overlapping zoning, ecosystem damage, and conflicts, and it demands procedural reform and stronger community participation (Sari et al., 2025, p. 6).

The seaweed industry requires clear, stable waters, so pollution, reclamation, and mining hinder growth. Ideally, cultivation should be carried out in waters with a transparency of ≥ 5 meters and away from estuaries to maintain stable salinity and light levels (Yustika et al., 2022, pp. 53-54). Spatial conflicts arise when shallow-water cultivation overlaps with shipping lanes, as in Nunukan, emphasizing the need for local governments to provide legal certainty (Pusaran Media, 2024b). Unlicensed cultivation creates legal challenges despite its positive economic impact on the coast. In 2003, seaweed production in Sumbawa generated IDR 5.4 billion, including IDR 30 million in local revenue and IDR 600 million in cash flow, and employed 3,900 workers (Damayanti et al., 2021, pp. 307-308). Cultivation income varies with market prices, ranging from USD 3,200-7,600 annually in South Sulawesi (Valderrama et al., 2013; Rimmer et al., 2021), equivalent to Rp38.4-91.2 million based on the 2014 exchange rate.

Seaweed cultivation provides social, economic, and environmental benefits to 62,000 coastal households (Langford, 2024, p. 4), increases fish and macrofauna populations (Rimmer et al., 2021, p. 6), and has a lower ecological impact compared to shrimp and fish farming (Eggertsen and Halling, 2020, p. 61). This aligns with the Blue Economy principles, which promote social well-being and justice while minimizing ecological impact (Islam and Bartell, 2022, p. 3). Seaweed cultivation also contributes to climate mitigation through low-carbon food, biofuels, feed, and eco-friendly fertilizers, while reducing fishing pressure and empowering coastal women (Sultana et al., 2022, p. 464). However, legal uncertainty from overlapping central and regional policies hinders investment and downstreaming, requiring institutional intervention to support innovation, strengthen MSMEs, and create incentives for 267,000 dependent households (Alpiani et al., 2025, pp. 866-868).

The 2023-2045 Blue Economy Roadmap faces various obstacles due to weak intersectoral coordination, low participation of smallholder farmers, and rigid regulations that create uncertainty and hinder investment (Serang City PPID, 2023). Conflicts of interest between stakeholders and the lack of transparent resolution mechanisms have also slowed its implementation and threatened the sustainability of the national fisheries sector (Alpiani et al., 2025, p. 866). This roadmap targets sustainable management of marine resources, including seaweed, to drive economic growth and social welfare towards a modern economic transition by 2045. Seaweed has become a leading export commodity through increased production, investment, and processing, with national and local policies emphasizing permit simplification, education, mentoring, and financing to strengthen smallholder farmers and sustainable growth (Konservasi Alam Nusantara, 2021).

The Role of Regional Governments in Accommodating Local Wisdom in Seaweed Industry Development

The RZWP-3-K serves as a strategic instrument for provincial governments to designate seaweed cultivation zones while integrating local wisdom, including marine customary rights, seasonal planting patterns, and customary prohibitions. Ministerial Regulation No. 8 of 2018 establishes a mechanism for the formal recognition of Indigenous Peoples' management areas through official proposals, with Article 5 stipulating that areas endorsed by Regional Government Decrees may be incorporated into the RZWP-3-K. This framework reinforced by Ministerial Regulation No. 28 of 2021, which governs planning, utilization, control, and supervision, this framework institutionalizes the linkage between local norms and cultivation permit governance, thereby safeguarding coastal community wisdom within a sustainable regional legal framework.

The influence of national regulations on regional authority in accommodating local wisdom has undergone significant transformation. During the era of regional autonomy, Law No. 22 of 1999 and Law No. 32 of 2004 conferred broad jurisdiction upon district and municipal governments in the management of coastal areas (Puspita, 2017, p. 2). The enactment of Law No. 1 of 2014, however, centralized the formulation of the RZWP-3-K at the national level, thereby constraining regional authority in spatial planning and delineating seaweed cultivation boundaries (Arifin and Satria, 2020, p. 523). Nevertheless, Articles 61 to 62 of Law No. 27 of 2007, together with Ministerial Regulation No. 8 of 2018, reaffirm the recognition, protection, and participation of Indigenous Peoples, ensuring that national policies continue to uphold local traditions.

The role of local governments in accommodating local wisdom in seaweed industry development is rooted in Article 18 of Law No. 6 of 2023, particularly Article 1, number 36, which defines local wisdom as noble values embedded in social life. It encompasses collective knowledge, norms, ethics, and traditions inherited across generations to manage natural and social resources, maintain ecological balance, and foster community solidarity (Rummar, 2022, p. 1581; Askodrina, 2022, p. 621). Within this framework, Article 27, paragraph 3 of Law No. 23 of 2014 grants local governments authority over marine resources up to 12 miles, providing the legal basis for mapping seaweed cultivation and protecting coastal and Indigenous communities.

The government's role in accommodating local wisdom in seaweed development is outlined in Article 63 of Law No. 27 of 2007, which promotes the empowerment of coastal communities through economic support and cultivation rooted in local values. Local governments can foster participation, partnerships, and eco-friendly technology, positioning local wisdom as a strategic tool for coastal empowerment. As stipulated in Article 5 of Ministerial Regulation No. 8 of 2018 and Article 60, paragraph (1) of Law No. 6 of 2023, communities may propose traditional fishing or customary management areas for incorporation into the RZWP-3-K. This supports cultivation based on local wisdom, such as the raft, span rope, and off-bottom methods (Purwati, 2017, pp. 13-14).

Regional governments must involve communities in every stage of coastal planning and management under Article 18, in particular Article 7, paragraph (6), and Article 7B of Law No. 6 of 2023, ensuring sociocultural harmony and binding public consultation in licensing. Law No. 6 of 2023 also governs marine space through the KKPRL and Business Licensing regimes. Spatial use must align with plans and obtain a KKPRL from the Central Government, taking into account ecosystem sustainability and community interests (Articles 16 to 17A). Article 18 imposes sanctions if unrealized within two years, while Article 20 mandates the facilitation of Business Licensing for local communities to ensure livelihood protection and legal certainty.

Marine spatial monitoring, as outlined in Articles 37-38 of Law No. 27 of 2007, involves communities through reporting and is supported by program accreditation that assesses consultation, environmental impacts, and welfare, with incentives proposed by regional leaders under Article 40, paragraphs (3-7). Article 22 of Law No. 6 of 2023 protects Indigenous Peoples (MHA) by exempting KKPRL obligations and recognizing customary rights (O'Connor and Oehler, 2020, p. 57). Furthermore, Articles 50 and 60 regulate authority between Central Governments and Regional Governments and guarantee community rights to propose areas, raise objections, and seek legal remedies, ensuring that marine licensing remains transparent, accountable, and aligned with local community interests.

Disputes regarding the use of the RZWP-3-K may be resolved through judicial or non-judicial mechanisms, with out-of-court agreements required to be written and binding on all parties, as stipulated in Articles 64 and 65 of Law No. 27 of 2007. Furthermore, Article 18 of Law No. 6 of 2023, specifically Article 60, paragraph (1), letter J, guarantees the community's right to file lawsuits against policies harmful to their welfare. In addition, Article 68 of Law No. 27 of 2007 regulates class action mechanisms that enable communities to defend their rights, ensure governmental accountability, and maintain a fair balance between public interests, local community welfare, and coastal environmental sustainability.

Local governments enhance the capacity of local farmers through coaching, training, mentoring, and research rooted in local wisdom. The Mitra Bahari network, established under Articles 41 and 42 of Law No. 27 of 2007, serves as a collaborative forum among government, academia, NGOs, and the private sector to strengthen human resources and ensure that cultivation respects local traditions. Developing a seaweed industry grounded in local wisdom requires spatial certainty, recognition of customary norms, community-oriented licensing, and sustainable downstream practices. The RZWP-3-K must acknowledge customary spaces, traditional prohibitions, and seasonal patterns, while Law No. 6 of 2023 upholds ecological principles through rehabilitation, conservation areas (KKPRL), and facilitation for Indigenous Peoples (MHA).

From an industrial strategy perspective, local governments play a vital role in harmonizing marine and terrestrial spatial planning, accelerating the KKPRL process, and designating integrated Seaweed Estate zones from upstream to downstream. This development includes seed provision, licensing, logistics, and downstream production, such as bioplastics and modern food. Legal certainty and transparency of information are essential to improving the competitiveness of seaweed products (Sakti et al., 2015, p. 9). The Ministry of Maritime Affairs and Fisheries has designated fifteen provinces as production centers, promoting seed production through kuljar gardens and zoning-based investment systems to ensure sustainable industry development (DJPDSPKP, 2023, pp. 21-22).

4. CONCLUSION

Legal certainty in coastal zoning is essential for the sustainability of the seaweed industry. However, the transfer of authority from local to central government under Law No. 6 of 2023 has created inconsistencies with Law No. 23 of 2014, leading to overlapping permits and weak legal protection for coastal communities. To ensure effective marine spatial governance, regulations must be harmonized through intersectoral coordination, clear technical guidelines, and transparent dispute-resolution mechanisms. Strengthening public participation and regional regulations on customary rights is vital to align national policies with local wisdom under the RZWP-3-K framework. Despite challenges such as limited institutional capacity and low community awareness, sustainable development can be achieved through coordination, legal harmonization, and collaboration among government, academia, and industry to promote ecological balance and inclusive governance.

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